Appendix C –
Greenhouse Gas Assessment for Huntington Beach Downtown Specific Plan dated April 13, 2009

Prepared by:
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Greenhouse Gas Assessment For The HUNTINGTON BEACH DOWNTOWN SPECIFIC PLAN CITY OF HUNTINGTON BEACH

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1.0 Background Information

1.1 Project Description

The City of Huntington Beach Downtown Specific Plan (DTSP) project boundary encompasses approximately 336 acres within downtown Huntington Beach. The proposed project includes new zoning designations, increase in allowed floor area ratios (FARs), modified development and design standards, street improvement requirements, and amended design guidelines. No change to the existing Specific Plan boundary is proposed.

The DTSP area extends from the intersection of Goldenwest Street with Pacific Coast Highway and curves along the coastline, including the Huntington Beach Pier, down to Beach Boulevard. The inland boundary of the DTSP area follows the prolongation of Sunrise Drive from Beach Boulevard to Pacific View Avenue where the boundary curves along Huntington Street and Atlanta Avenue. From Atlanta Avenue the boundary flows along Orange Avenue and continues up Lake Street to Palm Avenue where it connects to Main Street and along Pecan Avenue to 6th Street. From 6th Street and Walnut Avenue to Goldenwest Street and Walnut Avenue, parcels within the first block adjacent to Pacific Coast Highway are included in the DTSP area. All boundary lines follow the centerline of the affected street. The vicinity map is presented in Exhibit 1. The Specific Plan district designations are illustrated in Exhibit 2.

The proposed DTSP amendments update the existing Specific Plan. The DTSP would revise the existing 11 Specific Plan districts by dividing the downtown area into 7 new districts.

1.2 Greenhouse Gases and Climate Change

The Earth's climate has always been in the process of changing, due to many different natural factors. These factors have included changes in the Earth's orbit, volcanic eruptions, and varying amounts of energy released from the sun. Differences such as these have caused fluctuations in the temperature of the climate, ranging from ice ages to long periods of warmth. However, since the late 18th century, humans have had an increasing impact on the rate of climate change, beginning with the Industrial Revolution.

Many human activities have augmented the amount of "greenhouse gases" ("GHGs") being released into our atmosphere, specifically the burning of fossil fuels, such as coal and oil, and deforestation. The gases increase the efficiency of the greenhouse effect, which is the process of trapping and recycling energy (in the form of heat) that the Earth emits naturally, resulting in higher temperatures worldwide. The Intergovernmental Panel on Climate Change stated in February 2007 that warming is unequivocal, expressing very high confidence (expressed as a nine out of ten chance of being correct) that the net effect of human activities since 1750 has been one of warming. According to the National Oceanic and Atmospheric Administration (NOAA) and NASA data, the average surface temperature of the Earth has increased by about 1.2 to 1.4 ºF since 1900. The warmest global average temperatures in human record have all occurred within the past 15 years, with the warmest two years being 1998 and 2005. [EPA, 2007, epa.gov/climatechange/basicinfo.html].

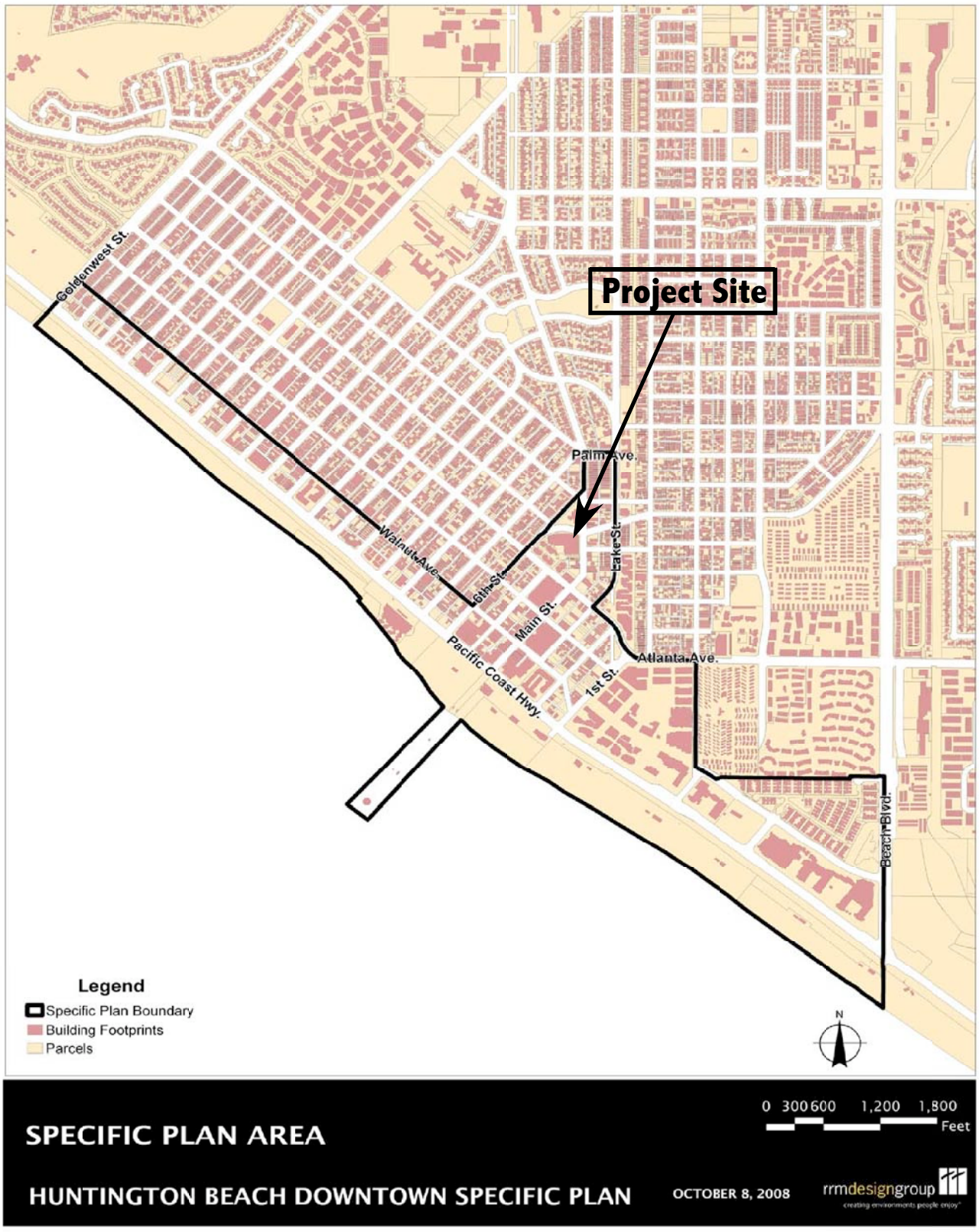


Exhibit 1
Vicinity Map

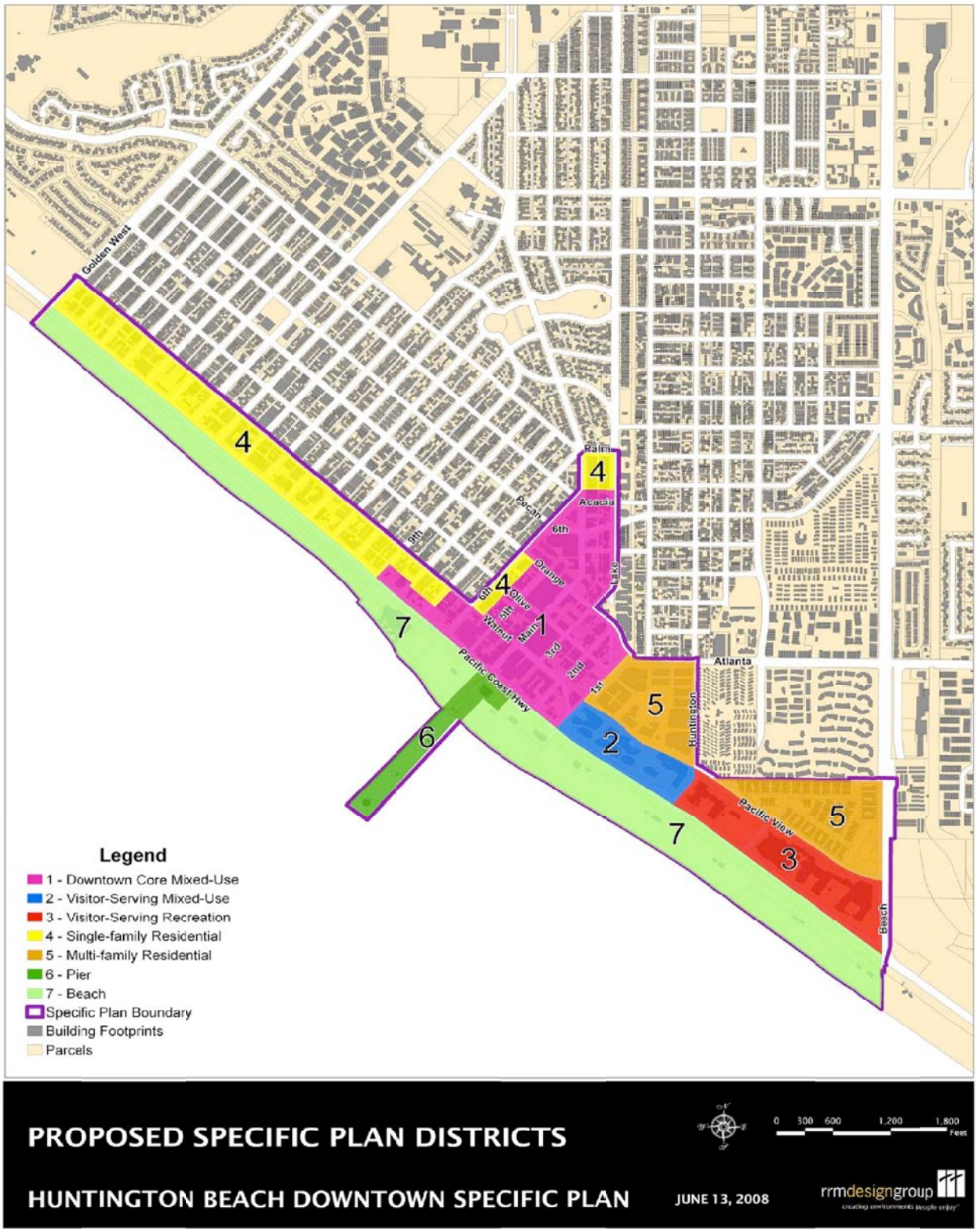


Exhibit 2
Huntington Beach DTSP

This process of heating is often referred to as 'global warming' although the National Academy of Sciences prefers the terms 'climate change' as an umbrella phrase which includes global warming as well as other environmental changes, in addition to the increasing temperatures.

Some of these effects include changes to rainfall, wind, and current patterns, as well as snow and ice cover, and sea level.

Depending on which GHG emissions scenario is used, climate models predict that the Earth's average temperature could rise anywhere between 2.5 to 10.4 ºF from 1990 to the end of this century. The degree of change is influenced by the assumed amount of GHG emissions, and how quickly atmospheric GHG levels are stabilized. At this point, however, the climate change models are not capable of predicting local impacts, but rather, can only predict global trends. [EPA, 2007, epa.gov/climatechange/basicinfo.html].

Global GHG emissions are measured in million metric tons of carbon dioxide equivalent ("MMT CO_2EQ") units. A metric ton is approximately 2,205 lbs. Some GHGs emitted into the atmosphere are naturally occurring, while others are caused solely by human activities. The principal GHGs that enter the atmosphere because of human activities are:

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), agriculture, irrigation, and deforestation, as well as the manufacturing of cement.

- **Methane (CH_4)** is emitted through the production and transportation of coal, natural gas, and oil, as well as from livestock. Other agricultural activities influence methane emissions as well as the decay of waste in landfills.

- **Nitrous oxide (N_2O)** is released most often during the burning of fuel at high temperatures. This greenhouse gas is caused mostly by motor vehicles, which also include non-road vehicles, such as those used for agriculture.

- **Fluorinated Gases** are emitted primarily from industrial sources, which often include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Though they are often released in smaller quantities, they are referred to as High Global Warming Potential Gases because of their warming forcing power. Fluorinated gases are often used as substitutes for ozone depleting substances.

These gases have different potentials for trapping heat in the atmosphere, called global warming potential ("GWP"). For example, one pound of methane has 21 times more heat capturing potential than one pound of carbon dioxide. When dealing with an array of emissions, the gases are converted to carbon dioxide equivalents for comparison purposes. The GWPs for common greenhouse gases are shown in Table 1.

Table 1
Global Warming Potentials (GWP)

Gas	Global Warming Potential
Carbon Dioxide	1
Methane	21
Nitrous Oxide	310
HFC-23	11,700
HFC-134a	1,300
HFC-152a	140
PFC: Tetrafluoromethane (CF_4)	6,500
PFC: Hexafluoroethane (C_2F_6)	9,200
Sulfur Hexafluoride (SF_6)	23,900

Source: EPA 2006. Non CO_2 Gases Economic Analysis and inventory. (http://www.epa.gov/nonco2/econ-inv/table.html), December 2006

Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state (California Energy Commission 2006a). This category was followed by the electric power sector (including both in-state and out-of-state sources) (22.2 percent) and the industrial sector (20.5 percent) (California Energy Commission 2006a). A byproduct of fossil fuel combustion is CO_2. Processes that absorb and accumulate CO_2, often called CO_2 "sinks," include uptake by vegetation and dissolution into the ocean. Methane, a highly potent GHG, results from off-gassing associated with agricultural practices and municipal solid waste landfills.

1.3 Emission Inventories

To put perspective on the emissions generated by a project and to better understand the sources of GHGs, it is important to look at emission inventories. The United Nations has taken the lead in quantifying GHG emissions and compiling the literature on climate change. The United Nations estimate for CO_2 equivalents for the world and for the top ten CO_2 producing countries is presented in Table 2.

Table 2
Top Ten CO_2 Producing Nations Between 1990-2004
(Emissions in Million Metric Tons (MMT) CO_2EQ)

Country	Emissions	Percent of Global
1. United States	7067.57	25.3%
2. China	4057.31	14.5%
3. Japan	1355.17	4.9%
4. India	1214.25	4.3%
5. Germany	1015.27	3.6%
6. Canada	758.07	2.7%
7. United Kingdom	665.33	2.4%
8. Brazil	658.98	2.4%
9. Italy	582.52	2.1%
10. France	562.63	2.0%
Total Global	**27,940.70**	**100.0%**

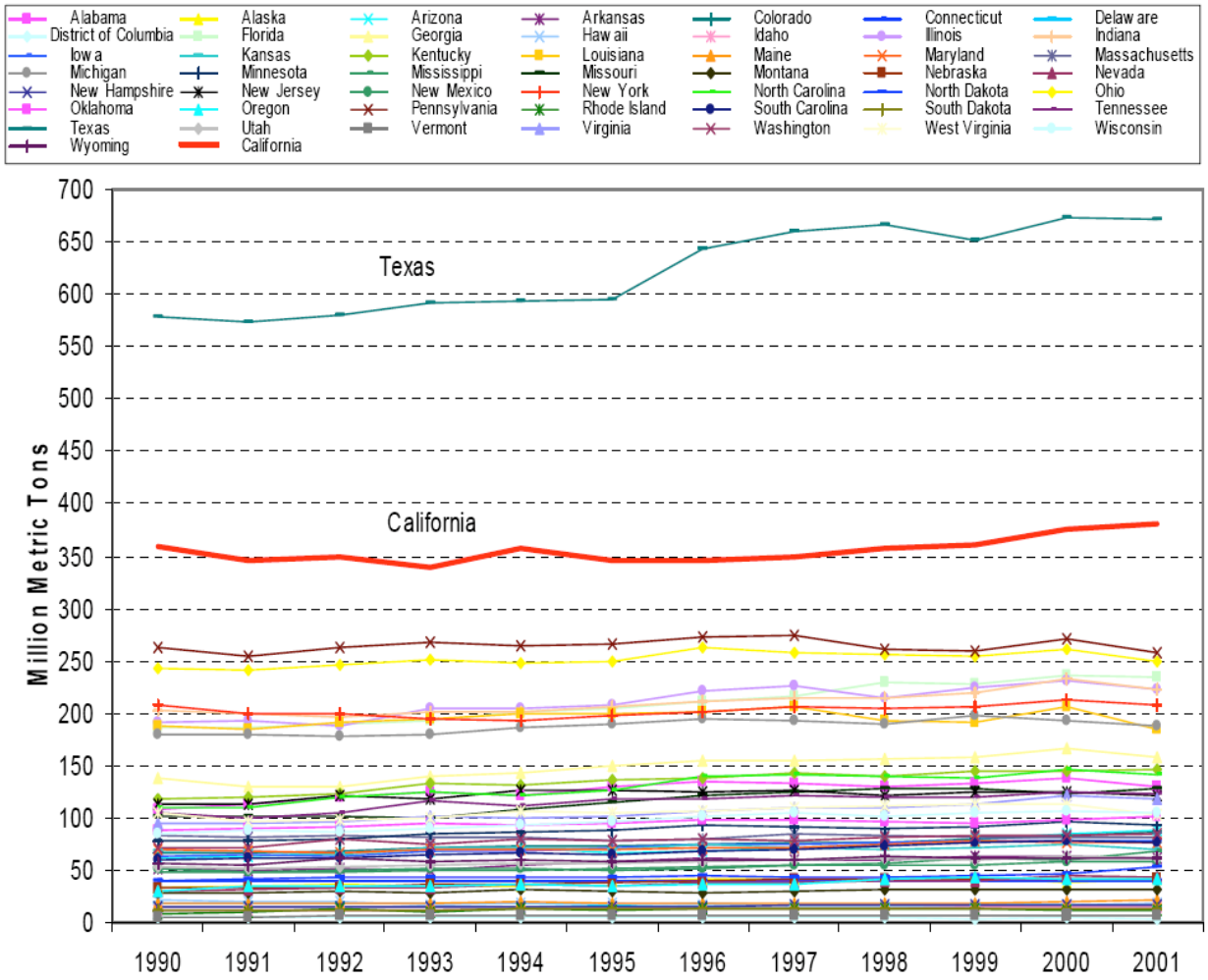
Source: United Nations Framework Convention on Climate Change, "National Greenhouse Gas Inventory Data for the Period 1990–2004 and Status of Reporting," October 19, 2006.

Global CO_2 emissions totaled about 27,941 MMT CO_2EQ in 2004. The United States released 7,068 MMT CO_2EQ in 2004, which is approximately 25% of the earth's total emissions.

Within the United States, California has the second highest level of GHG production with Texas having the highest. In 2001, the burning of fossil fuels produced over 81% of total GHG emissions. In relation to other states, California is the second highest producer of CO_2 by fossil fuels, as shown in Exhibit 3.

Exhibit 3

CO_2 Production Through Fossil Fuels by State



[Source: California Energy Commission, "Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004," December 2006.]

1.4 Sources of Greenhouse Gases in California

The California Energy Commission ("CEC") categorizes GHG generation by source into five broad categories. The categories are:

- **Transportation** includes the combustion of gasoline and diesel in automobiles and trucks. Transportation also includes jet fuel consumption.

- **Agriculture and forestry** GHG emissions are composed mostly of nitrous oxide from agricultural soil management, CO_2 from forestry practice changes, methane from enteric fermentation, and methane and nitrous oxide from manure management.

- **Commercial and residential** uses generate GHG emissions primarily from the combustion of natural gas for space and water heating.

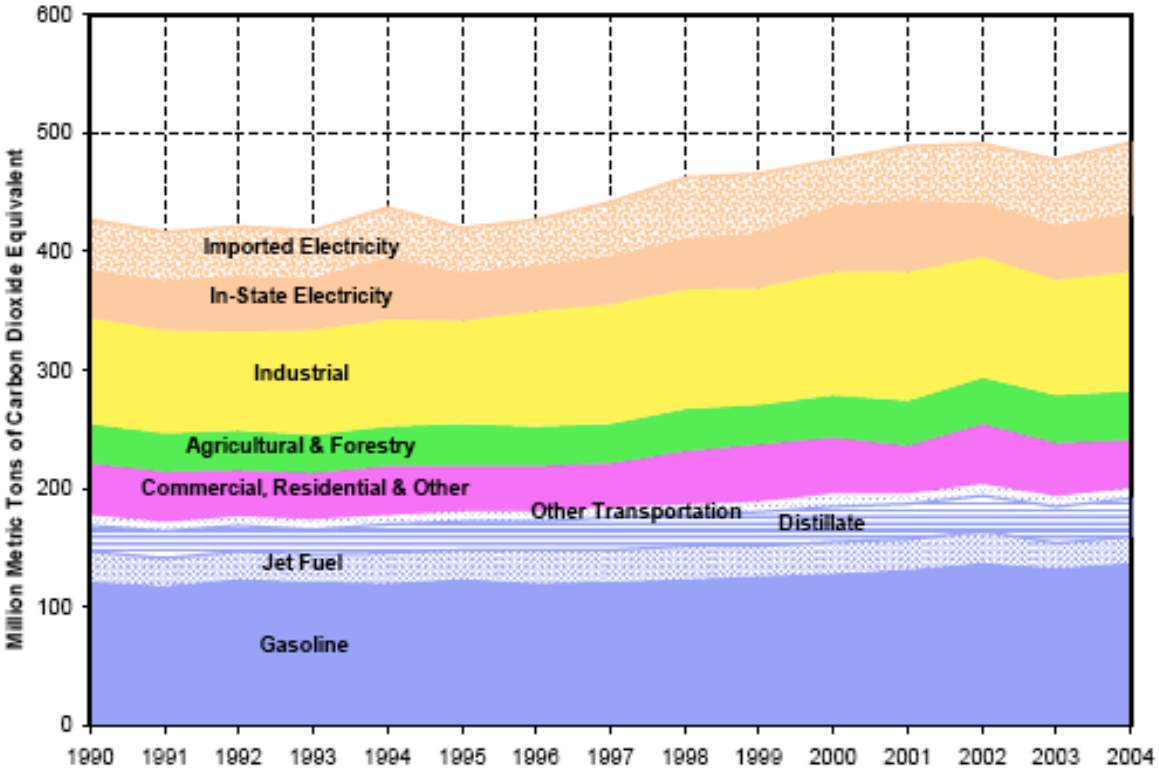
- **Industrial** GHG emissions are produced from many industrial activities. Major contributors include oil and natural gas extraction; crude oil refining; food processing; stone, clay, glass, and cement manufacturing; chemical manufacturing; and cement production. Wastewater treatment plants are also significant contributors to this category.

- **Electric generation** includes both emissions from power plants in California as well as power plants located outside of the state that supply electricity to the state.

The amount of GHGs released from each of these categories in California from 1990 to 2004 is shown in Exhibit 4.

Exhibit 4

CA Greenhouse Emissions by Sector (In MMT CO_2EQ)

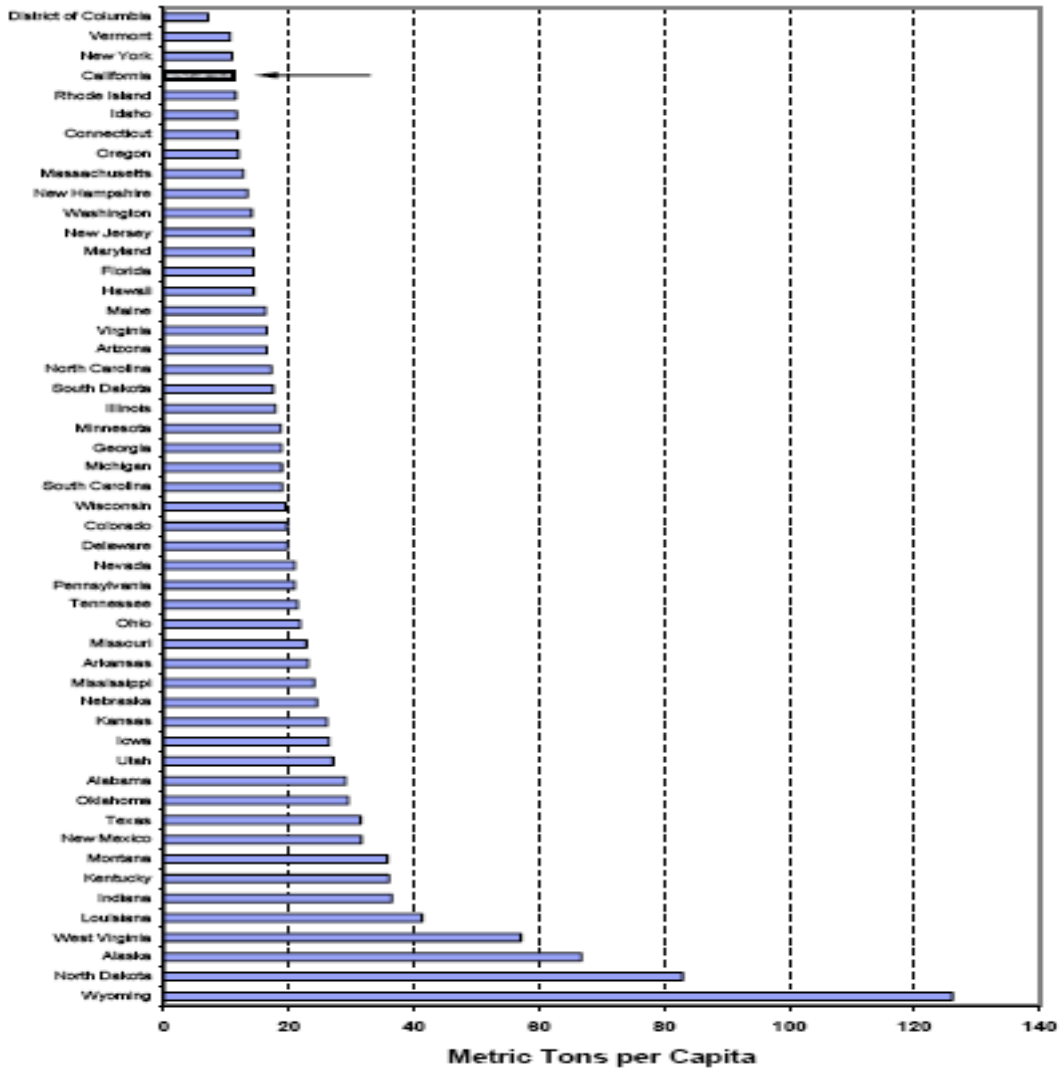


[Source: California Energy Commission, "Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004," December 2006]

Examination of Exhibit 4 indicates that most of California's GHGs are emitted by transportation sources, such as automobiles, trucks, and airplanes. (The transportation sector is labeled as gasoline, jet fuel, distillate, and other transportation in Exhibit 4.) The electric generation sector is the second largest GHG contributor in the state.

While California has the second highest rate of GHG production in the nation, it should also be noted that California has one of the lowest per capita rates of GHG emissions, as shown in Exhibit 5. According to Exhibit 5, California had the fourth lowest per capita rate of CO_2 production from fossil fuels in the United States. Wyoming produced the most CO_2 per capita, while the District of Columbia produced lowest.

Exhibit 5
CO_2 Emissions From Fossil Fuels Per Capita (2001)



[Source: California Energy Commission, "Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004," December 2006]

2.0 Regulatory Framework

Federal Plans, Policies, Regulations, and Laws. The federal government began studying the phenomenon of global warming as early as 1978 with the National Climate Protection Act, 92 Stat. 601, which required the President to establish a program to "assist the Nation and the world to understand and respond to natural and man-induced climate processes and their implications." The 1987 Global Climate Protection Act, Title XI of Pub. L. 100-204, directed the U.S. EPA to propose a "coordinated national policy on global climate change," and ordered the Secretary of State to work "through the channels of multilateral diplomacy" to coordinate efforts to address global warming. Further, in 1992, the United States ratified a nonbinding agreement among 154 nations to reduce atmospheric GHGs.

More recently, in *Massachusetts v. EPA* (April 2, 2007), the United State Supreme Court held that GHGs fall within the Clean Air Act's definition of an "air pollutant," and directed the EPA to consider whether GHGs are causing climate change. If so, the EPA must regulate GHG emissions from automobiles under the Clean Air Act. As of this writing, USEPA has yet to begin rulemaking proceedings to consider whether human greenhouse gases are contributing to climate change.

In addition, Congress has increased the corporate average fuel economy (CAFE) of the U.S. automotive fleet. In December 2007, President Bush signed a bill raising the minimum average miles per gallon for cars, sport utility vehicles, and light trucks to 35 miles per gallon by 2020. This increase in CAFE standard will create a substantial reduction in GHG emissions from automobiles, which is the largest single emitting GHG sector in California.

As of this writing, however, there are no adopted federal plans, policies, regulations or laws setting a mandatory limit on GHG emissions. Further, the EPA has not finalized its evaluation in the wake of *Massachusetts v. EPA.*

California State Plans, Policies, Regulations, and Laws. In the past year, California has distinguished itself as a national leader in efforts to address global climate change by enacting several major pieces of legislation, engaging in multi-national and multi-state collaborative efforts, and preparing a wealth of information on the impacts associated with global climate change.

Assembly Bill 32, the California Global Warming Solutions Act of 2006 (Health and Safety Code § 38500 et seq.). In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006. In general, AB 32 directs the California Air Resources Board ("CARB") to do the following:

- On or before June 30, 2007, CARB shall publish a list of discrete early action measures for reducing GHG emissions that can be implemented by January 1, 2010;

- By January 1, 2008, establish the statewide GHG emissions cap for 2020, based on CARB's calculation of statewide GHG emissions in 1990 (an approximately 25 percent reduction in existing statewide GHG emissions);

- Also by January 1, 2008, adopt mandatory reporting rules for GHG emissions sources that "contribute the most to statewide emissions" (Health & Safety Code § 38530);

- By January 1, 2009, adopt a scoping plan that indicates how GHG emission reductions will be achieved from significant GHG sources through regulations, market mechanisms, and other strategies;

- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures;

- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020; and

- On January 1, 2012, CARB's GHG emissions regulations become operative.

- On January 1, 2020, achieve 1990 levels of GHG emissions.

In a December 2006 report, CARB estimated that California emitted between 425 and 468 million metric tons of CO_2 in 1990. In December 2007, ARB finalized 1990 emissions at 427 million metric tons of CO_2.

AB 32 takes into account the relative contribution of each source or source category to protect adverse impacts on small businesses and others by requiring CARB to recommend a *de minimis* threshold of GHG emissions below which emissions reduction requirements would not apply. AB 32 also allows the Governor to adjust the deadlines mentioned above for individual regulations or the entire state to the earliest feasible date in the event of extraordinary circumstances, catastrophic events, or threat of significant economic harm.

ARB "Early Action Measures" (June 30, 2007). On June 21, 2007, CARB approved its early action measures to address climate change, as required by AB 32. The three measures include: (1) a low carbon fuel standard, which will reduce the carbon-intensity in California fuels, thereby reducing total CO_2 emissions; (2) reduction of refrigerant losses from motor vehicle air conditioning system maintenance through the restriction of "do-it-yourself" automotive refrigerants; and (3) increased CH_4 capture from landfills through the required implementation of state-of-the-art capture technologies.

ARB Mandatory Reporting Regulations (December 2008). Under AB 32, ARB propounded regulations to govern mandatory greenhouse gas emissions reporting for certain sectors of the economy, most dealing with approximately 94 percent of the industrial and commercial stationary sources of emissions. Regulated entities include electricity generating facilities, electricity retail providers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 metric tons of CO_2 from stationary source combustion.

Senate Bill 97 (2007). By July 1, 2009, the Governor's Office of Planning and Research (OPR) is directed to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by the California Environmental Quality Act. The Resources Agency is required to certify and adopt these guidelines by January 1, 2010. OPR is required to periodically update these guidelines as ARB implements AB 32. In addition, SB 97 states that the failure to include a discussion of greenhouse gas emissions in any CEQA document for a project funded under the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or projects funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006 shall not be a cause of action under CEQA. This last provision will be repealed on January 1, 2010.

Executive Order S-01-07 (2007). Executive Order S-01-07 calls for a reduction in the carbon intensity of California's transportation fuels by at least 10 percent by 2020. As noted above, the low-carbon fuel standard ("LCFS") was adopted by CARB as one of its three "early action measures" on June 21, 2007.

Senate Bill 375 (September 2008). In September 2008, SB 375 was signed by Governor Schwarzenegger. SB 375 is a comprehensive global warming bill that helps to achieve the goals of AB32. To help establish these targets, the CARB assigned a Regional Targets Advisory Committee to recommend factors to be considered and methodologies for setting greenhouse gas emission reduction targets. SR 375 also provides incentive – relief from certain CEQA requirements for development projects that are consistent with regional plans that achieve the targets. SB 375 requires CARB to develop, in collaboration with the Metropolitan Planning Organization (MPO), passenger vehicle greenhouse gas emissions reduction targets for 2020 and 2035 by September 30, 2010. The MPO is required to include and adopt, in their regional transportation plan, a sustainable community strategy that will meet the region's target provided by CARB.

Senate Bill 1368 (2006) (Public Utilities Code §§ 8340-41). SB 1368 required the California Public Utilities Commission ("PUC") to establish a "GHG emission performance standard" by February 1, 2007, for all electricity providers under its jurisdiction, including the state's three largest privately-owned utilities. Pub. Res. Code § 8341(d)(1). These utilities provide approximately 30 percent of the state's electric power. After the PUC acted, the CEC adopted a performance standard "consistent with" the PUC performance standard and applied it to local publicly-owned utilities on May 23, 2007 (over one month ahead of its June 30, 2007 deadline). Cal. Pub. Res. Code § 8341(e)(1). However, the California Office of Administrative Law ("OAL") found four alleged flaws in the CEC's rulemaking. The CEC overcame these alleged flaws and adopted reformulating regulations in August 2007.

Senate Bill 107 (2006) . Senate Bill 107 ("SB 107") requires investor-owned utilities such as Pacific Gas and Electric, Southern California Edison and San Diego Gas and Electric, to generate 20 percent of their electricity from renewable sources by 2010. Previously, state law required that this target be achieved by 2017.

Western Regional Climate Action Initiative (Arizona, California, New Mexico, Oregon, Utah, Washington)(2007). Acknowledging that the western states already experience a hotter, drier climate, the Governors of the foregoing states have committed to three time-sensitive actions: (1) by August 26, 2007, to set a regional goal to reduce emissions from the states collectively, consistent with state-by state goals; (2) by August 26, 2008, to develop "a design for a regional market-based multi-sector mechanism, such as a load-based cap and trade program, to achieve the regional GHG reduction goal;" and (3) to participate in a multi-state GHG registry "to enable tracking, management, and crediting for entities that reduce GHG emissions, consistent with state GHG reporting mechanisms and requirements."

Executive Order S-3-05 (June 1, 2005). Executive Order S-3-05 calls for a reduction in GHG emissions to 2000 levels by 2010; 1990 levels by 2020; and for an 80 percent reduction in GHG emissions below 1990 levels by 2050. It also directs the California Environmental Protection

Agency ("CalEPA") to prepare biennial science reports on the potential impact of continued global warming on certain sectors of the California economy.

California's Renewable Energy Portfolio Standard Program (2005). In 2002, California established its Renewable Energy Portfolio Standard Program, which originally included a goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The state's most recent 2005 Energy Action Plan raises the renewable energy goal from 20 percent by 2017, to 33 percent by 2020.

Title 24, Part 6, California Code of Regulations (2005). In 2005, California adopted new energy efficiency standards for residential and nonresidential buildings in order to reduce California's energy consumption. This program has been partially responsible for keeping California's per capita energy use approximately flat over the past 30 years.

Assembly Bill 1493 (2002) (Health and Safety Code § 43018.5). Assembly Bill 1493 ("AB 1493") required CARB to develop and adopt the nation's first GHG emission standards for automobiles. Not only have litigants challenged their legality in federal court, but also USEPA denied California's request for a Clean Air Act waiver to implement its regulations. As of this writing, California and other states who seek to adopt California's greenhouse gas emissions standards for automobiles are challenging USEPA's denial in federal court.

Climate Action Registry (2001). California Senate Bills 1771 and 527 created the structure of the California Climate Action Registry ("Registry"), and former Governor Gray Davis signed the final version of the Registry's enabling legislation into law on October 13, 2001. These bills establish the Registry as a non-profit entity to help companies and organizations establish GHG emissions baselines against which future GHG emission reduction requirements could be applied. Using any year from 1990 forward as a base year, participants can record their annual GHG emissions with the Registry. In return for this voluntary action, the State of California promises to offer its "best efforts" to ensure that participants receive consideration for their early action if they are subject to any future state, federal, or international emissions regulatory scheme.

South Coast Air Quality Management District Plans, Policies, Regulations and Laws. The South Coast Air Quality Management District ("SCAQMD") adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" in April 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives:

- Phase out the use and corresponding emissions of chlorofluorocarbons (CFCs), methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995;

- Phase out the large quantity use and corresponding emissions of hydrochlorofluorocarbons (HCFCs) by the year 2000;

- Develop recycling regulations for HCFCs (e.g., SCAQMD Rules 1411 and 1415);
- Develop an emissions inventory and control strategy for methyl bromide; and,
- Support the adoption of a California GHG emission reduction goal.

The legislative and regulatory activity detailed above is expected to require significant development and implementation of energy efficient technologies and shifting of energy production to renewable sources.

City of Huntington Beach Plans, Policies, Regulations, and Laws.
The City of Huntington Beach does not have any plans, policies, regulations, significance thresholds or laws addressing climate change at this time.

3.0 Significance Thresholds

The CARB is the lead agency for implementing AB32. In October 2008, CARB published a Proposed Scoping Plan, in coordination with the Climate Action Team (CAT), to establish a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California. The measures in the Scoping plan approved by the Board will be developed over the next two years and be in place by 2020. California is the fifteenth largest emitter of GHGs on the planet, representing about 2 percent of the worldwide emissions. According to climate scientists, California and the rest of the developed world will have to cut emissions by 80 percent from today's levels to stabilize the amount of CO2 in the atmosphere and prevent the most severe effects of global climate change. This long range goals is reflected n California Executive Order S-3-05 that requires an 80 percent reduction of greenhouse gases form 1990 levels by 2050. Reducing GHG emissions to 1990 levels means cutting approximately 30 percent from business-as-usual emissions levels projected for 2020, or about 15 percent from today's levels. On a per-capita basis, that means reducing our annual emissions of 14 tons of CO equivalent for every man, woman and child in California down to about 10 tons per person by 2020.

Significant progress can be made toward the 2020 goal includes existing technologies, and improving the efficiency of energy use. Other solutions involve improving our state's infrastructure, transitioning to cleaner and more secure sources of energy, and adopting 21st century land use planning and development practices. Key elements of California's recommendations for reducing its greenhouse gas emissions to 1990 levels by 2020 include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standard;
- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportations-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;

- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and

- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long term commitment to AB 32 implementation.

CARB anticipated 5 million metric tons of CO2 equivalent (MMTCO2E) reduction for Regional Transportation-Related Greenhouse Gas Targets.

To meet the 1990 target established by CARB 32, CARB recommends a de minimis (minimal importance) emission threshold of 0.1 MMT annual (100,000 MT per year) CO_2EQ per transportation source category. Source categories whose total aggregated emissions are below this level are not proposed for emission reduction requirements in the Scoping Plan but may contribute toward the target via other means. As each regulation to implement the Scoping Plan is developed, CARB and other agencies will consider more specific de minimis levels below which the regulatory requirements would not apply. These levels will consider the cost to comply, especially for small businesses, and other factors. Until approved thresholds and guidelines are adopted at the local and regional level, the proposed de minimis threshold of 100,000 MT CO_2EQ per year for transportation sources will be utilized for transportation sources.

In addition to the Proposed Scoping Plan, CARB released the Preliminary Draft Staff Proposal (Staff Proposal) on October 24, 2008 with the objective of developing interim significant thresholds for commercial and residential projects. CARB has already proposed a threshold of 7,000 annual MT for industrial operational sources. However, the Staff Proposal has not yet developed thresholds applicable for residential and commercial sources. Therefore, criteria for determining threshold levels for residential and commercial sources have yet to be defined. Under CARB's Staff Proposal, recommended approaches for setting interim significant thresholds for GHG under the CEQA are underway. CARB staff proposes to define certain performance standards (e.g., for energy efficiency) by referencing or compiling lists from existing local, state or national standards. For some sub-sources of GHG emissions (e.g., construction, transportation, waste), CARB staff has not identified reference standards.

The Staff Proposal's Potential Performance Standards and Measures were released in December 2008. Inside the Staff Proposal, CARB's Potential Performance Standard and Measures included some construction measures. These guideline measures area:

- Provide alternative transportation mode options or incentives for workers to and from worksite on days that construction requires 200 or more workers; and
- Recycle and/or salvage at least 75% of non-hazardous construction and demolition debris by weight (residential) or by weight in volume (commercial); and
- Use recycled materials for at least 20% of construction materials based on cost for building materials, based on volume for roadway, parking lot, sidewalk and curb

material. Recycled materials may include salvaged, reused, and recycled content materials.

CARB's Staff Proposal has identified California Energy Commission's (CEC) Tier II Energy Efficiency goals as an appropriate performance standard for energy use. Under State Law, the CEC is required to establish eligibility criteria, conditions for incentives, and rating standards. Thus, the CEC established energy efficiency standards for homes and commercial structures, and requires new buildings to exceed current building standards by meeting Tier Energy Efficiency goals. Currently, CEC's proposed guidelines for the solar energy incentive program recommend a Tier II goal for residential and commercial projects of a 30% reduction in building combined space heating, cooling, and water heating energy compared to the 2008 Title 24 standards.

Existing green building rating systems like LEED, GreenPoint Rated, the California Green Building Code, and others, contain examples of measures that are likely to result in substantial GHG emission reductions from residential and commercial projects. Performance standards that already exist and have been proven to be effective, at the local, state, national or international level, are preferable. For residential and commercial projects, staff has proposed that the GHG emissions of some projects that meet GHG performance standards might under some circumstances still be considered cumulatively considerable and therefore significant. However, criteria threshold for residential and commercial has yet to be developed.

4.0 Short term Construction Emissions

Temporary impacts will result from construction activities. The primary source of GHG emissions generated by construction activities is from use of diesel-powered construction equipment and other combustion sources (i.e., generators, worker vehicles, materials delivery, etc.). The GHG air pollutants emitted by construction equipment would primarily be carbon dioxide.[1]

Typical emission rates for construction equipment were obtained from URBEMISv9.2.4, which was released in 2007. Carbon dioxide (CO_2) emissions were calculated utilizing URBEMIS9.2.4. While the URBEMISv9.2.4 model does not include other GHG emissions generated by the proposed project (such as CH_4, N_2O, and Fluorinated Gases), CO_2 emissions comprise approximately 99.6 percent of emissions from burning diesel fuel. Consequently, non-CO_2 GHG emissions represent a very small percentage (approximately 0.4 percent) of the total short-term construction GHG emissions and would not represent a significant source of GHG emissions generated by the proposed project during construction, even when combined with CO_2 emissions. Therefore, non-CO_2 construction GHG emissions have not been quantified in this analysis.

The proposed DTSP area encompasses approximately 336 acres. The maximum development potential of the project includes approximately 213,467 square feet of retail, 92,332 square feet

[1] When one gallon of diesel fuel is burned it produces 22.384 pounds of CO_2, 0.000534 pounds of CH_4, and 0.0001928 pounds N_2O. Based on the global warming potential of 21 for CH_4 and 310 for N_2O relative to CO_2, the total pounds of CO_2-equivalent (CO_2EQ) emissions from diesel fuel is 22.455 CO_2EQ/gallon, which is 99.6 percent of the total emissions. Bay Area Air Quality Management District (BAAQS), *Source Inventory of Bay Area Greenhouse Gas Emissions*, November 2006.

of restaurant, 92,784 square feet of office, 30,000 square feet of cultural facilities, 648 residential units, and 235-room hotel land uses. This maximum buildout does not take into account unique constraints on individual parcels. The buildout will occur over time in response to market demand, and thus it is unknown when complete buildout will occur. The traffic study shows a buildout year of 2030. Therefore, the construction timeframe of the project is assumed to occur between 2010 and 2030.

Mass Site Grading is the grading of the entire project site. This work may occur simultaneously with other construction phases. Equipment used in the URBEMIS default assumption include (1) excavator, (1) grader, (1) dozer, (3) scrapers, (3) tractors/loaders/backhoes, and (1) water truck. A major component of the grading emissions is the particulate matter generated by grading activities. If water or other soil stabilizers are used to control dust as required by SCAQMD Rule 403, the emissions can be substantially reduced (i.e., by 50+ percent depending on dust control application type and frequency). The particulate matter calculations include a 61% reduction from watering (see Appendices for URBEMIS assumptions and output).

Building Construction is the phase of construction when the buildings are erected. Building construction emissions were calculated for the portion of construction with the greatest amount of activity that will result in the highest emissions. Equipment used in the URBEMIS default assumption include (1) crane, (3) forklifts, (1) generator set, (1) welder, and (3) tractors/loaders/backhoes.

Asphalt Paving generates diesel engine exhaust emissions from the paving equipment and asphalt material haul trucks, as well as fugitive ROG emissions from the asphalt itself. Asphalt emissions were estimated utilizing URBEMISv9.2.4 default assumptions. The equipment required during project the asphalt paving would include: (1) paver, (2) rollers and (2) paving equipment.

Architectural Coatings include painting exterior and interior walls as well as coatings applied to windows and window casings. ROGs are emitted from these coatings as well as the solvents used in cleanup of the coatings. The amount of ROGs that are emitted is dependent on the specific coating being used and its VOC content. For this project, only low-VOC paint is assumed to be utilized. Architectural coating emissions were estimated utilizing URBEMISv9.2.4 default assumptions. The data used to calculate painting emissions are included in the appendix.

Grading/Building Construction/Paving/Architectural Coating is the grading and construction of the buildings described above with the addition of paving and painting activities that may occur simultaneously. URBEMIS defaults were used to estimate the construction emissions.

Total Construction Emissions

Using the estimates from URBEMISv.9.2.4 of emissions from grading, building construction, paving and architectural coatings, the peak air pollutant emissions for the proposed DTSP were calculated and presented in Table 3. These emissions represent the highest level of emissions during construction, if all construction phases would occur simultaneously. This is a reasonable assumption for this type of project, since it is likely that development of different areas will be

started at different times. So it is possible to have construction in all of the different phases going on at the same time. Construction emissions were calculated for years 2010 through 2030. The first column of Table 3 presents the total CO_2 emissions for construction to occur between 2010 and 2030. The second column shows the average construction emissions per year. This would be the total construction emissions divided by 20 years. Worksheets showing the specific data used to calculate the grading emissions are presented in the appendix.

Table 3
Construction Emissions

Activity	Construction Emissions CO_2 (Metric Tons)
Total Construction Emissions:	54,500
Average Emissions per Year:	**2,595**

NOTE: Other GHG emissions (such as CH_4, N_2O, and Fluorinated Gases) are not calculated in URBEMIS9.2.4; however, CO_2 emissions comprise approximately 99.6 percent of emissions from burning diesel fuel.
MT = metric tons.

5.0 Estimate of Project Greenhouse Gas Emissions

The primary source of GHG emissions generated by the proposed project will be from motor vehicles. Other emissions from the project will be generated from the combustion of natural gas for space and water heating, as well as off-site GHG emissions from the generation of electricity consumed by the project.

GHG emissions associated with the project were calculated by using URBEMISv9.2.4. URBEMISv9.2.4 is a computer model published by the California Air Resources Board (CARB) that calculates EMFAC2007 emission factors.

Emissions from landscaping were calculated by using URBEMISv9.2.4 default assumptions. Low-VOC paints were used exclusively for the modeling of emissions from architectural coatings.

To calculate the GHG emissions produced from the project, the proposed land uses and daily vehicle trips were utilized. The average daily trip (ADT) generation for the proposed DTSP was obtained from the traffic study prepared by Kimley-Horn and Associates, Inc., revised December 19, 2008. The project's daily trip generation is projected to be 13,397. The proposed DTSP entails maximum development potential of approximately 213,467 square feet of retail, 92,332 square feet of restaurant, 92,784 square feet of office, 30,000 square feet of cultural facilities, 648 residential units, and 235-room hotel land uses. The square footages and emission factors utilized in calculating the emissions with these sources are provided in the appendix. The annual project emissions were analyzed and are presented in Table 4 for 2030.

The most notable greenhouse gases (GHG) are CH_4 and CO_2. N_2O is another greenhouse gas. However, emission rates for most sources of N_2O are not available and they appear to be

minuscule (account for only 0.1% or less of the greenhouse gas emissions for this type of project). As a result, N_2O emissions are not included in this report.

While the URBEMISv9.2.4 model does not include other GHG emissions generated by the proposed project CO_2 emissions comprise approximately 99.6 percent of emissions from burning diesel fuel. Consequently, non-CO_2 GHG emissions represent a very small percentage (approximately 0.4 percent) of the total short-term construction GHG emissions and would not represent a significant source of GHG emissions generated by the proposed project during construction, even when combined with CO_2 emissions. Therefore, non-CO_2 construction GHG emissions have not been quantified in this analysis.

Table 4
Total Project Net Emissions – Year 2030
(Tons Per Year, except as noted)

Source	CO_2 Tons/year
Operational	
-Vehicles	23,007
Area Source	
- Natural Gas	2,704
- Hearth	83
- Landscape	3
Total Project Emissions:	**25,794**
Total Emissions in Metric Tons Per Year (MT)	**23,403**

NOTE: URBEMISv9.2.4 model does not include other GHG emissions (such as CH_4, N_2O, and Fluorinated Gases). These non-CO_2 represent a very small percentage of the total GHG emissions.

Table 4 shows that 89% of the GHG emissions (as expressed in CO_2 equivalents) generated by the project are projected to be from motor vehicles. Natural gas consumption accounts for only 11% of the GHG emissions, and other area source emissions are negligible.

The GHG emissions were also projected for future years beyond 2030 and are presented in Table 5. The analysis indicates that there will be an increase in GHG emissions between 2030 and 2040. This is likely a conservative estimate as newer and more fuel efficient models of automobiles would be released in the coming years. Neither the U.S. EPA nor CARB currently regulate CO_2 emissions.

Table 5
Project Trend Of GHG Emissions
(metric tons per year of CO_2)

Year	MT/Year CO_2
2030	23,403
2040	23,763

Table 6 compares the GHG emissions from the project to total emissions in California. This comparison shows that the project represents a very small fraction of total GHG emissions.

Table 6
Comparison of Project Emissions With Global Emissions

	MMT CO_2EQ	Year
Project Emissions	0.0234	2030
State of California	471	2004

The emissions generated by this project will contribute a miniscule amount to the overall climate change issue. When compared to California's GHG emissions, the contribution from any of the equivalency programs would be miniscule, approximately 0.0050% of 2004 California emissions. Therefore, for the purposes of this analysis, global climate change impacts will be considered at the cumulative level to consider whether any potential increase in GHG emissions that may be associated with the project over the current physical baseline, should be considered significant on a cumulative basis.

According to the comment letter issued by the California Attorney General, Jerry Brown, on the Coyote Valley Specific Plan, cumulative impacts should be considered. The letter states, "Global warming is a quintessentially cumulative impact, caused by the added effects of countless individual projects at the local, regional, state, national, and international level." If this project is considered in more of the regional context, if must be asked whether the project will in fact, generate new emissions or whether it actually results in a more efficient regional land use plan. The traffic study does address the regional context of the project in regards to general background regional growth and the use of the SCAG 2030 Model. The trip data in the traffic study for the project were extracted from this model.

The Attorney General letter continues with another benchmark for causing a significant impact. The Attorney General states, "Where a project's direct and indirect GHG-related effects, considered in the context of the existing and projected cumulative effects, may interfere with California's ability to achieve its GHG reduction requirements [as required by AB 32], the project's global warming-related impacts must be considered cumulatively significant." No regulations have yet been promulgated as a result of AB 32. So far, CARB's indication is that the first wave of regulations will address emissions from major industrial and agricultural sources. CARB is also very likely to promote requirements for motor vehicles, via new emission controls and increased fuel economy that would significantly lower GHG emissions in future years. CARB is not considering restrictions on growth or new development. Since this project would, of course, comply with any regulations promulgated by the CARB and since CARB is

not putting any restrictions on growth, this project cannot be seen as interfering with "California's ability to achieve its GHG reduction requirements." Therefore, no significant cumulative impacts are anticipated.

GHG emissions are a significant global, national state and local factor contributing to climate change. Therefore, the City should consider actions that reduce GHG emissions for all projects. Potential conditions of approval that could be required to reduce project GHG emissions include, but are not limited to the list of potential measures and programs provided below. These potential mitigation measures are from CARB Staff Proposal's Potential Performance Standards and Measures.

Construction

- Recycle and/or salvage at least 75% of non-hazardous construction and demolition debris by weight (residential) or by weight in volume (commercial).
- Use recycled materials for at least 20% of construction materials based on cost for building materials, based on volume for roadway, parking lot, sidewalk and curb material. Recycled materials may include salvaged, reused, and recycled content materials.

Residential Transportation

- The project as proposed represents carbon-efficient, compact development with close proximity to transit and variety of services. Therefore, no additional mitigation measures in this category are needed.

Commercial Transportation

- The project meets the following proximity and design elements:
  - ½ mile of residential neighborhood with average density of at least 10 dwelling units/net acre; and
  - ½ mile of at least 10 neighborhood services; and
  - pedestrian access between project and services.

- Additionally the project should institute the following measure:
  - Institute comprehensive transportation demand management (TDM) programs to reduce employee trips by at least 20%.

Energy Efficiency and Renewable Energy

- Meet CEC's voluntary Tier II Energy Efficiency standards in effect at the time building construction begins. This measure provides a 30% reduction when combined with space heating, cooling and water heating energy compared to 2008 Title 24 Standards.

Water

- Reduce indoor potable water usage by at least 20%, and reduce outdoor potable water usage for landscape irrigation by at least 50%.

Waste

- Where local recycling and/or composting programs exists
  - design facilities and structures to encourage participation in program; and
  - install adequate, accessible recycling and composting receptacles in common or public areas; and
  - provide easy access to central recycling and composting receptacles or collections area.

The application of performance standards and measures result in emission reductions of 20-50% for residential land uses and 7-15% for commercial land uses based on CARB estimates.

6.0 Recommended Measures/Actions

No mitigation measures are required since no impacts have been identified. The project meets the California per capita goals identified in AB32.

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